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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/074,345	02/12/2002	Halbert Tam	AMAT/6075/CMP/CMP/RKK	5690

32588 7590 07/14/2005

APPLIED MATERIALS, INC.
2881 SCOTT BLVD. M/S 2061
SANTA CLARA, CA 95050

EXAMINER

MCDONALD, SHANTESE L

ART UNIT	PAPER NUMBER
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3723

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/074,345

Applicant(s)

TAM ET AL.

Examiner

Shantese L. McDonald

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on 25 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-25 and 30-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-25 and 30-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 4/25/05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-25 and 30-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Srinivasan et al. in view of Spikes, Jr.

Srinivasan et al. teaches a method of removing a dielectric disposed on a substrate, having a first dielectric, which is silicon oxide, and a second dielectric material, which is silicon nitride, disposed thereon, (col. 8, lines 46-49), comprising positioning the substrate in proximity with a fixed abrasive polishing pad, (col. 8, lines 21-25), dispensing a polishing composition having at least one organic compound, which comprises glycine in about 0.01 to about 20 wt. % of the polishing composition, (col. 6, lines 27-30), at least one pH adjusting agent, which is potassium hydroxide, deionized water, and combinations thereof, (col. 6, lines 31-45), and the pH of the composition is between 9 and 12, (col. 7, lines 20-34), Srinivasan et al. also teaches that the substrate includes a shallow trench isolation structure, (col. 6, lines 50-53), and chemical mechanical polishing the substrate wherein the at least one organic compound enhances the removal rate of the first dielectric material using the fixed abrasive polishing pad without affecting the removal rate of the second dielectric material, (col. 6, line 60 – col. 7, line 7), and the second removal rate being less than the first removal

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rate. Srinivasan et al. teaches all the limitations of the claims except for pre-polishing the substrate to planarize the substrate by removing a bulk overfill of the first dielectric material, the polishing system comprising a carousel with at least one substrate head assembly, a controller, a first and second platen and removing the silicon nitride at a rate of between about 0.01 to about 300 Å/min, removing the silicon oxide at a rate of between about 50 and 5000 Å/min, and the silicon oxide and the silicon nitride being removed at a removal rate ratio of greater than 10:1 and from about 100:1 to about 2000:1. Spikes Jr. et al. teaches a carousel, 40, a controller, 28, first and second platens, (col. 8, lines 58-61), pre-polishing the substrate, (col. 8, lines 36-37). It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the polishing method of Srinivasan et al. with a pre-polish step, a carousel, first and second platens and a controller, in order to remove the bulk overfill of dielectric material and more efficiently polish the substrates.

It would have been further obvious to one having ordinary skill in the art at the time the invention was made, to provide the polishing system with a the capability to remove the silicon nitride at a rate of between about 0.01 to about 300 Å/min, removing the silicon oxide at a rate of between about 50 and 5000 Å/min, and the silicon oxide and the silicon nitride being removed at a removal rate ratio of greater than 10:1 and from about 100:1 to about 2000:1, in order to vary outcome of the polishing dependant on the desired end product.

Response to Arguments

Applicant's arguments filed 4/25/05 have been fully considered but they are not persuasive.

Spikes Jr., teaches a method of removing dielectric material including a pre-polishing step. Spikes, Jr. teaches pre-polishing, and then polishing with a fixed abrasive. The Examiner notes that even though the reference teaches that the second polishing process is performed without a slurry, there can be a third process, and whether or not slurry is used is a design choice, (col. 10, lines 40-42). Therefore Spikes does teach a multiple step polishing process with a pre-polish step which precedes polishing with a fixed abrasive.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shantese L. McDonald whose telephone number is (571) 272-4486. The examiner can normally be reached on 8:00 a.m. - 4:30 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Hail can be reached on (571) 272-4485. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S.L.M.
July 5, 2005

A handwritten signature in black ink, appearing to read "Joseph J. Hail, III".

Joseph J. Hail, III
Supervisory Patent Examiner
Technology Center 3700